

Skin Industry

The snake skin industry in India boomed in the 1950's; one tannery in Madras alone was processing five to ten thousand skins per day. Several tribal and non-tribal groups became full time snake catchers and suppliers, one of these being the Irula tribals of Tamilnadu (Madras) State.

Recent laws banning export of all snakes (dead or alive) and snake products are going to hit several thousand people very hard. Traditional hunting/gathering areas have either become agricultural lands or built upon and forests still suitable for tribal life have become sanctuaries and national parks. Our tribals slowly have to resign themselves to squalid city existence where the best they can hope for is occasional work on very low pay scales.

On the other hand these rulings point to the fact that reptile conservation is at last getting the seriousness it deserves in India where 25-30% of the grain is consumed by rats. There has been tremendous commercial pressure on several reptiles like for example the Star Tortoise (*Geochelone elegans*), Chameleon (*Chameleo gracilis*), Rat Snake (*Ptyas mucosus*) and many others for the skin and pet trade.

It can be argued that India cannot afford the luxury of total protection of all reptiles. It seems that many of the commercially valuable reptiles can be utilized on a sustained yield basis; but this can only be done after valid studies are made on these resources. It must also be ensured that tribal suppliers get their fair share of the profits. One idea is the formation of tribal cooperatives where the tribals get the maximum profits and their collection activities are regulated as to numbers, seasons and so on by ecologist advisers associated with the cooperative.

The latest laws regulating reptile exploitation and export are summarized on page 10 & 11.

- Z Whi aker

1975 Projects

1. A herpetological survey of Pudukkottai District was undertaken on invitation from the Tamilnadu Government for the District Gazetteers, with the help of two tribal assistants.
2. An experiment was carried out with the Central Food Technology Research Institute in Mysore on the feasibility of employing Irula tribals on the rat control program as a possible alternative to dangerous chemical rodenticides. As the Irulas eat rats they have expert methods for rat catching like smoking, digging and trapping.
3. A one month herpetological collection was carried out in the Andaman Islands (Middle and North Andaman).
4. Collection of Mugger (*Crocodylus palustris*) eggs was carried out in Tamil Nadu. 25% of the hatchlings will be released in suitably protected wild habitats after three years and the rest kept for rearing at the Madras Crocodile Bank.
5. Romulus Whitaker (Honorary Director) spent three weeks in Gujarat on a survey of crocodiles (*C. palustris*) in the Gir sanctuary and in the Barda Hills.
6. Gharial surveys were conducted in U. P., Orissa and Assam, by E. Mahadev, Field Investigator, sponsored by the New York Zoological Society.
7. Herpetological collection was carried out in the Nilgiris and Anamallais and some very interesting specimens were collected including *Xylophis perroteti* and several species of *Uropeltis*.
8. 18 Nests of Olive Ridleys sea-turtle (*Lepidochelys olivacea*) were collected and hatched and 1130 hatchlings released into the sea.
for a 7% hatching average.

1976 Projects

1. Romulus Whitaker visited the Orissa Crocodile and Sea-turtle Breeding Scheme and spent three weeks at the sites of the gharial and salt-water crocodile breeding and rearing stations. Some brief points about the Project are given on page 9.

2. The Madras Snake Park had a snake show in Bombay organized by the World Wildlife Fund-India and sponsored by Glaxo Laboratories. With continuous slide shows, lectures and demonstrations, the show was very successful and received wide publicity in the press, radio and television.
3. During the mugger nesting season (February to March) the Madras Snake Park, with active cooperation from the Forest Department, collected about 15 nests for artificial hatching. Hatching is expected to take place any day now and a full report on this year's collection will appear in the next Newsletter.
4. The most exciting event this year was that one of our female muggers at the Crocodile Bank laid 23 eggs. 22 babies hatched naturally on 8th May; one egg was infertile. The hatchlings are well formed and healthy. The Madras Snake Park is the third institution in India to accomplish successful captive breeding of mugger, and has set the highest hatching percentage (95.69).
5. Romulus Whitaker joined a gharial egg collection program in Nepal for one and a half months. It was organized by Dr H. R. Bustard, FAO/UNDP Crocodile Consultant and the eggs collected will be divided between the Orissa Crocodilian Project and the U. P. Crocodilian Project. Rom Whitaker was camped on the Karnali River where there is a population of at least seven adult gharial but no nests were found. We think they might not have laid this year because of the disturbance on this stretch of the River by the Karnali Dam feasibility project.
6. E. Mahadev spent 40 days in Madhya Pradesh on a gharial survey and visited the Ken, Tons, Son, Mahanadi and Betwa Rivers. This was again possible through a grant from the NYZS. His report will be summarized in the next Newsletter.
7. Our friend Holger Rumpff from the University of Muenster has been with us for the last two months and has helped us start a project on visual acuity and the angle of vision in snakes.

Conservation

1. Since its establishment the Madras Snake Park has been making representations to Government about Guindy Deer Sanctuary, the one

square mile remnant of the original scrub vegetation of Madras. Our latest concern was the construction of a cancer hospital in the Sanctuary, for which seven acres had been allotted. The wall had been constructed and foundation laid when the Prime Minister visited the Snake Park in February. She showed great concern on being told about the gradual whittling away of Guindy and on her return to Delhi issued instructions for the hospital to be moved elsewhere. Money that has been already spent on construction will be reimbursed.

2. The export of all snakes (dead or live) and snake products has been banned by Central Government ruling.
3. The five species of sea turtles that occur in Indian seas (*Lepidochelys olivacea*, *Eretmochelys imbricata*, *Caretta caretta*, *Chelonia mydas* and *Dermochelys coriacea*) are now protected from export.
4. In March this year Kalakkadu, one of the last large chunks of primal rain forest in South India, was gazetted as a Sanctuary by the Tamilnadu Forest Department. Located on the eastern face of the Ashambu Hills, Kalakaddu extends North and South and has a 140 sq km fully protected core area, with 50 metre high trees and masses of orchids and ferns. Kalakaddu receives both the south-west (summer) and north east (winter) monsoon. From the plains up one passes through degraded farm land into heavily eroded scrub. But once in the hills where there are no roads for poachers and timber contractors there is a transition to good deciduous forest and montane rain forest or sholas. This area is one of the few remaining strong holds of the King Cobra (*Ophiophagus hannah*) and Lion-tailed Macaque (*Macaca silenus*) in South India.

Nesting Mugger Observed

Natesan, an Irula tribal assistant of the Snake Park who was camped at Chidambaram Waterworks during the crocodile egg collection project this year, watched a mugger or marsh Crocodile (*Crocodylus palustris*) lay eggs and pack her nest. In looking at literature on the subject we find that this is the first time mugger nesting has been described.

At 6-30 a.m. on 15th March '76 Natesan was walking on the centre bundh of Chidambaram Tank and approached a 3 m mugger within 15 yards.

Her eyes were closed and she was facing the slope, head away from the water. From the frequent hunching movements he knew she was laying. After half an hour she stopped this movement and started scraping earth forward with front feet, turning while doing so, eventually coming to rest with head towards water and over the pile of excavated earth from the nest hole. This she scraped into the nest hole with hind feet until full. Then she flattened the earth covering the nest and surrounding earth with her belly and lay still for fifteen minutes. She appeared to notice Natesan's close presence and slipped into the water, head on surface, 30 yards out while he checked the nest.

There were 30 eggs in the nest which was left to hatch naturally. The female is occasionally seen lying on her nest, even in broad daylight.

Mugger on a Hill

During this year's crocodile egg collection again with the help of a tribal friend, we were able to observe the unique behaviour of a mugger in Amaravathi Dam in early March.

Walking round the Dam, Munian, a Polliar tribal noticed a large mugger track near the water's edge leading toward a hill. We followed the track across a furlong of flat rocky land and half way up the steep hill, through boulders and heavy scrub. The mugger was lying under a large rocky ledge. She seemed to be a gravid female about 3 m. long. We approached her within 10 m. and this did not seem to worry her.

Binod Choudhury of the Orissa Crocodile Project who visited the Dam at the end of March reported that she laid her eggs on the hill; but she apparently made the nest hole too shallow and most of them rolled down the slope and broke.

Mugger in Drought

Last year in the Barda Hills, Kutch, Romulus Whitaker followed a crocodile track almost 1 km. up into scrub jungle hills. He found and caught the 1½ m. mugger half hidden under a large boulder. It had left the small lake (which was drying up) possibly to try to reach a larger reservoir 12 km. away. It was released the next day in a deeper reservoir. In that area no less than fifty mugger were killed during last year's drought (the worst in 40 years).

Sea-turtles

During the '75/'76 nesting season (December-March) 42 nests (roughly 4,500 eggs) of the Olive Ridleys Sea-turtle (*Lepidochelys olivacea*) were collected and transplanted for artificial hatching and release, to eliminate egg-predators like dogs, jackals and humans and hatchling predation by crabs, birds and so on. 60% of the collection resulted in normal, healthy hatchlings, thus around 2,700 babies were released into the sea. With planned efforts and improvement in technique (possibly involving fishing villages along the Coast in the project) at least a hundred nests could be collected and hatching success brought up by 20%.

We are very grateful to Mr and Mrs Delouche who once more were active participants in the project (and did most of the work!) and let us use their compound on the beach for the hatchery.

Dugongs (Dugon dugon)

During October '75 S. Valliappan, an associate of the Madras Snake Park visited Pondicherry, Rameswaram, Mandappam and the Krusadai and Shingle Islands to investigate reports of dugong slaughter in these areas, which are located on the coast of Tamilnadu adjoining the Gulf of Munnar. Kilakkarai features the regular dugong market as the local population relish the meat which is bought for Rs. 4 or 5 a kg. The most common sizes caught are 2-3 m. long weighing 100-200 kgs and the capture is done with special thick nets. The animals are usually clubbed to death before being hauled into the boat as they could upset the craft if pulled in alive. A decade ago some fishermen thrived on dugong fishing at certain stretches of the sea with *Zoestra* grass beds. Now few people fish exclusively for dugongs but a chance to catch one is never missed as the meat brings in about 300 Rs.

The Central Marine Fisheries Research Institute at Mandappam Camp has two dugongs in a tank bedded with the local sea grass. These were caught in the narrow channel between Pullitiven and Pallivastiven islands near Krusadai.

In recent years no large groups of dugongs have been seen. We are sending out a detailed questionnaire to fishermen and forest officials in the various sites but a planned extensive survey should be undertaken and recommendations made to Government about enforcing dugong protection. One problem is that there is no protection policy for marine wildlife. Dugongs are listed under Schedule I of the Wildlife (Protection) Act of 1972.

Karnali River

There are few roads in Western Nepal, which is the reason so much natural wealth is left. We were camped in April on the banks of the Karnali River 60 kms north of the Indian border at Chisapani (cold water), on a survey of *Gavialis gangeticus* and assisting in an egg collection project being carried out by the Indian Crocodile Project.

The Karnali is a snow-fed river of fair size and goes through a 4 km Gorge above Chisapani, where the river is up to 12 metres deep and averages about 200 metres in width. In the crystal clear waters mahseer and 15 other fish species are plentiful. Seven gharial bask regularly on the white sand banks on the east bank of the river; a remnant of a formerly healthy population. The Karnali is the last major tributary of the Ganga that remains undammed and this is obviously why the river is in prime health. However this may not be so for long. AUN sponsored feasibility study is underway and the gharial and mugger now bask to the sound of blasting, drilling and motor boats. It is an interesting fact that this is a \$ 2,500,000 project out of which only \$ 5000 was allotted for ecological studies on the impact of the dam.

As up-river of the dam site is too cold and full of rapids and down-river is a wide shallow flood plain, it will be well to consider the translocation of these gharial if the dam is built.

A brief survey was also done on the Babai River Gorge (Sarju in India) just north of the newly gazetted Karnali-Bardia Wildlife Sanctuary. Here six gharial were seen and at least two more reported.

We visited Kateranian Ghat just south of the Nepal border where the Karnali is called the Girwa. At a sharp bend in the river massive trees uprooted by annual floods lie in the water bordered by sand bars and sand banks. Here we observed 16 gharial (and several more were reported) making this possibly the world's largest concentration of this species.

This year gharial egg collection is being undertaken in Orissas, Bihar, U. P. and Rajasthan.

Snake Bite Case Histories

1. **Name :** Rajendran

Age & Condition : 10 years; sickly

Snake : 10 inch Saw-scaled Viper (*Echis carinatus*)

Bite : Two fangs; bitten on left index finger while pinning the head with crow bar. (Nov. '75)

Symptoms & Treatment : Slight swelling and pain. No antivenom treatment; treated with herbal preparation (vellayerge). Normal next day.

Remarks : Rajendran's father Chockalingam is a well known medical man among Irulas and says he has been "immunizing" his son against *Echis* bite for the last five years with special herbal preparations which he will not disclose. It is interesting to note however that though the Irulas treat *Echis* and cobra bites with herbs, they almost always receive antivenom for Russells Viper (*V. russelli*) and Krait (*B. caeruleus*) bites.

2. **Name :** Solomon Pushparaj

Age & Condition : 22 years, strong

Snake : 4 ft Cobra (*Naja naja*)

Bite : Two fangs; bitten on top of hand while demonstrating cobras. (1 January; 3-30 p.m.)

Symptoms & Treatment : Tournequet tied on upper arm and rushed immediately to Royapettah Hospital.

4.10 p.m.-first ampule (10 cc) antivenom given; slight pain on hand

7.30 p.m.-increased pain, fully conscious. Second ampule antivenom given

11.00 p.m.-increased pain; general condition very bad; fully conscious

12.00 p.m.-delirious, third ampule antivenom given

1.45 a.m.-salivating, legs paralyzed, tongue swollen, loss of voice

3.00 a.m.- loss of sight; slightly conscious. Doctors lose hope

3.30 a.m.- antivenom given in drip with glucose (2 ampules)

4.30 a.m.- condition improved

6.30 a.m. - declared out of danger

Remarks: Solomon remained perfectly calm throughout treatment; shock might have complicated his case seriously.

3. **Name :** Doraiswamy

Age & Condition : About 75 years; very feeble

Snake : Metre long Russells Viper

Bite : One fang, on thigh; while adjusting dhoti (March '76)

Symtoms & Treatment : Tourniquet tied on thigh fifteen minutes after bite. Refused to go to hospital but was forced into a taxi and sent to Royapettah where he received antivenom (one ampule) 40 minutes after bite. Intense/local pain for two days, after which he escaped from hospital and went home. Pain subsided in four days.

Remarks : This bite illustrates the degree of carelessness with which venomous snakes are handled by the Irulas. Doraiswamy had the snake in a thin cloth bag in his right hand which he used to adjust his dhoti. A similar case happened last year; Armugan was coming to the Snake Park with a cloth bag with a small cobra slung over his shoulder. He received a one fang bite and was treated with one ampule of antivenom.

4. **Name :** Balakrishnan

Age & Condition : 35 years; strong and healthy

Snake : Metre long Karait

Bite : Two fangs, on hand, while pinning the snake (April '76)

Symtoms & Treatment : Bitten at 9 a.m. and taken to a local medical man in the village who performed mantras and gave him herbal preparations. Condition worsened gradually and he died at 10 p.m.

Orissa Crocodile & Sea Turtle Breeding Scheme

Under the guidance of Dr H.R. Bustard, FAO/UNDP Crocodile Expert, this Project will breed and rear the three species of Indian crocodilians (*Gavialis gangeticus*, *Crocodylus palustris* and *Crocodylus posorus*). So far the achievements of the project are:

1. Satkosia Gorge on the Mahanadi River has been declared a Sanctuary (roughly 400 sq kms) for gharial and mugger. 42 gharial hatchlings ('75) are being reared and a gharial breeding enclosure with a 30 ft deep pond with circulating water has been constructed at Nandankanan Biological Park near Cuttack.

2. Bhitarkanika (mangrove forests) is now a 150 sq km Sanctuary for *Crocodylus porosus*. 28 hatchlings are being reared at the site.
3. Simlipal Tiger Reserve will be the site for the mugger sub-project. With active participation of the Madras Snake Park and the Tamilnadu Forest Department, this project should get off the ground in another two months.
4. A preliminary survey of sea turtles on the Orissa Coast near Wheelers Island has just been completed. During the nesting season (January & February) 33,000 Olive Ridleys (*Lepidochelys olivacea*) were marked in three nights in an 8 km stretch of beach.
5. Four students are working on their PhD's on crocodilians under Dr H.R. Bustard and are actively involved in the Scheme. They are: Lala A. K. Singh (gharial); Binod Choudhury (mugger); S. Kar (salt-water crocodile); and Maharana (farming technology). Another student is expected to join the Project to work on sea turtles.

Recent laws on reptile exploitation and export

- (a) The capture, killing and export of the following is strictly prohibited under Schedule I of the Wildlife (Protection) Act of 1972 :
 - (i) Gharial or Gavial (*Gavialis gangeticus*)
 - (ii) Saltwater Crocodile (*Crocodylus porosus*)
 - (iii) Mugger or Marsh Crocodile (*Crocodylus palustris*)
- (b) All snakes, venomous and non-venomous, products and parts thereof are now banned for export (Export Trade Notice No. 203/75 of (22—12—75))
- (c) The export of the following reptiles and amphibians will not normally be allowed and they now appear in Schedule II of the Wildlife (Protection) Act of 1972 :
 - (i) Water Monitor (*Varanus salvator*)
 - (ii) Agra Monitor Lizard (*Varanus griseus*)

- (iii) Yellow Monitor Lizard (*Varanus flavescens*)
- (iv) Common Monitor Lizard (*Varanus bengalensis*)
- (v) All sea turtles (*Lepidochelys olivacea*, *Chelonia mydas*, *Eretmochelys imbricata*, *Caretta caretta*, *Dermochelys coriacea*)
- (vi) All land and fresh water turtles
- (vii) Spiny-tailed Lizard (*Uromastix hardwicki*)
- (viii) Egg-eating snake (*Elachistodon westermanii*)
- (ix) Himalayan Newt (*Tyletorriton verrucosus*)

The preceding can only be exported under special circumstances (e. g. scientific, educational work) under application to the Ministry of Agriculture.

India's Paradise Islands

The Andaman and Nicobar Islands lie about 800 miles off India's east coast in the Bay of Bengal. There are over 300 islands of about 2,000 sq kms; 75% are forested. The Islands have a fascinating history from early days when they were mislabelled the Cannibal Isles to the dark prison days when they were called Kala Pani. Today there are still stone age tribals resisting contact with the outside world.

There are hundreds of endemic and unique insects, reptiles, birds and mammals including the Narcondom Hornbill, Andaman Day Gecko, Andaman Fruit Bat and many others. There are well over 200 species of birds; about 35 land snakes, 20 sea snakes and 25 different lizards. Sea turtles nest on the beaches and salt water crocodiles roam in the mangroves. There are about 45 species of mammals of which 16 are bats. There have been some devastating introductions of exotics, the most evident being the spotted deer from the Indian mainland in the early 1900's. the deer have spread to most of the close islands of the northern groups (being excellent swimmers,) and no one has yet assessed their impact on the ecology of these once herbivore-free islands.

Several major forestry attempts have been made since 1900 but with the exception of a major match factory and a plywood factory, forestry operations have proved very costly and unprofitable. Rather than conventional exploitation of the islands (which is already stripping bare the last of the mainland

forests) a carefully planned development based on use of wildlife and forest resources as a renewable harvest (including careful tourism) is the only answer. The Government has the responsibility to protect the 3 main aboriginal tribes of the islands; the Onge, whose home on Little Andaman is being gradually deforested; the Jarawa of the West Coast of the main islands and Sentinel Island who resist "civilisation" with the desperation of survival instincts; and the Shom Pen of Great Nicobar. A tribe of over 5,000 has been wiped out since early colonization attempts in the mid 1,800's. Contact with the outside world's disease and way of life was fatal for them. The present pressure on the islands is increasing day by day as settlers arrive with each boat from the mainland. The islands are being used to take care of refugees, repatriates and ex-servicemens. Most of the commodities still come from the mainland; the burgeoning population is already 1.5 lakhs. We wonder where it will stop?

The Madras Snake Park

Initiated and founded by Romulus Whitaker (Honorary Director) in 1969 with financial help from World Wildlife Fund, the Madras Snake Park is a private organization and is self supporting on an entrance charge of 25 paise. About 500 snakes are housed in open "pits" and terrariums. Apart from being a public education centre the Park undertakes and encourage research on Indian herpetofauna. Over half a million people visit the Park each year.

In '75 a crocodile breeding project, the Madras Crocodile Bank, was started for the breeding, and rearing of the three species of Indian crocodilians (*Crocodylus palustris*, *Crocodylus porosus* and *Gavialis gangeticus*) all of which have shown an alarming decline in number due to poaching, habitat destruction, etc. The World Wildlife Fund has donated Rs. 10,000 to this project. Due to paucity of funds opening of the Crocodile Bank has been delayed.

